

Supplementary Table S1: Calves enrolled in each treatment group for the years analyzed in this study.

	Autogenous	Commercial	Sham	Total
2017	68	73	71	212
2019	76	64	72	212
2020	85	85	78	248

Supplementary Table S2: Sequence of rPilA antigen and negative control scrambled peptide antigen used in this study.

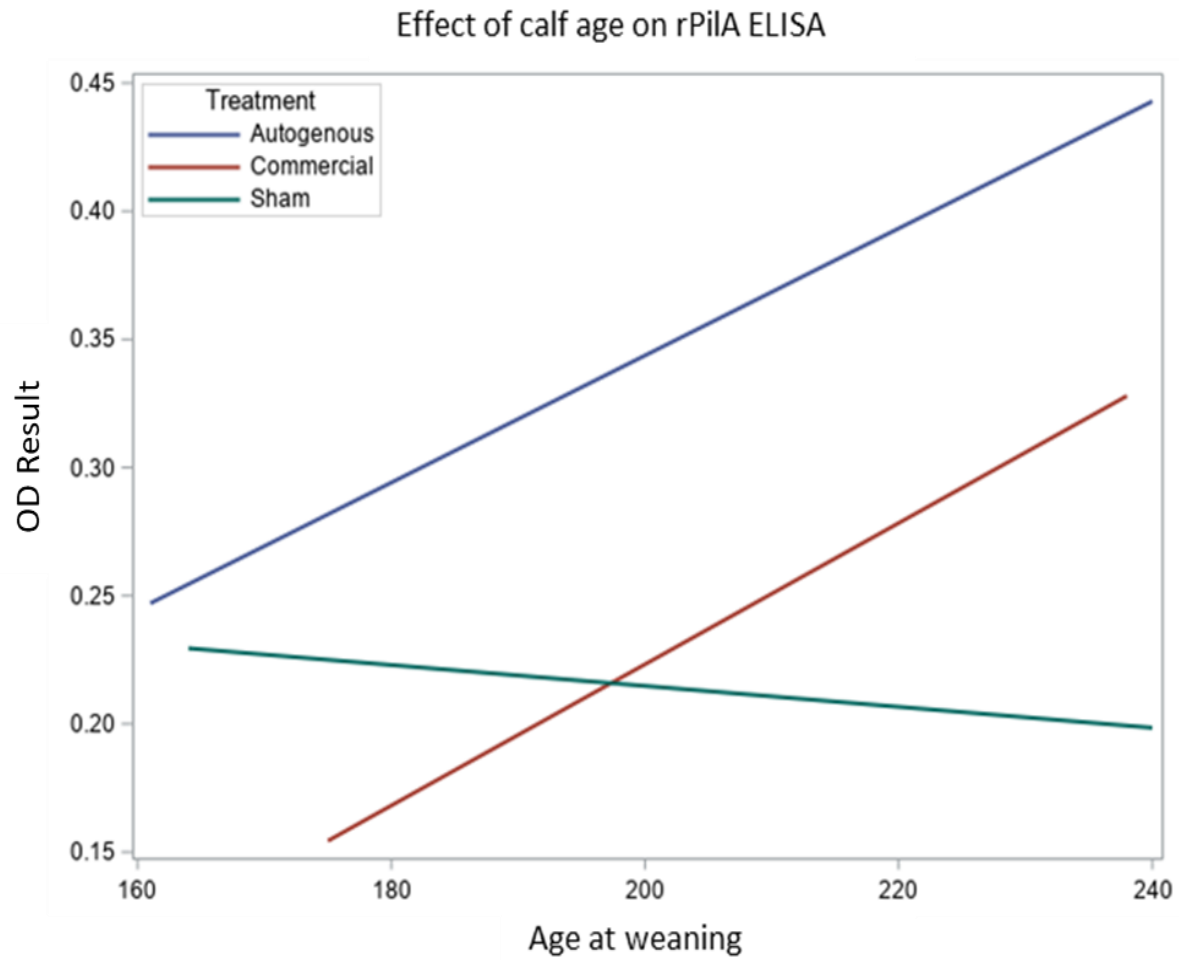
Antigen	Amino Acid Sequence
Recombinant full length PilA (rPilA)	MNAQKGFTLIELMIVIAIIGILAAIALPAYQ DYISKSQTTRVVGELAAGKTAVDAAALFEG KTPKLGKAANDTEEDIGLTTTGGTARSNL MSSVNIGGGAFATGAGTLEATLGNRANKD IAGAVITQSRDAEGVWTCTINGSAAPGWK SKFVPTGCKEH
Scrambled peptide	NLWGEANPNSGNGCSAQALSGLQPAQMT KVGDTKCSLT

Supplementary Table S3: Predicted probability of IBK development (Mean x 100%) for each combination of treatment, management group, and sex.

Phenotype combination	Estimate	Standard Error	Mean	SEM
Autogenous Black Angus Heifer	-1.7993	0.2993	0.1419	0.03646
Autogenous Black Angus Bull	-1.5722	0.2927	0.1719	0.04166
Commercial Black Angus Heifer	-1.5201	0.3058	0.1794	0.04502
Autogenous Red Hybrid Heifer	-1.4603	0.2177	0.1884	0.03328
Sham Black Angus Heifer	-1.4499	0.2987	0.1900	0.04598
Commercial Black Angus Bull	-1.293	0.2897	0.2154	0.04895
Autogenous Red Hybrid Bull	-1.2332	0.2201	0.2256	0.03845
Sham Black Angus Bull	-1.2227	0.2918	0.2275	0.05127
Commercial Red Hybrid Heifer	-1.1811	0.2162	0.2348	0.03884
Autogenous Black Hybrid Heifer	-1.1287	0.209	0.2444	0.0386
Sham Red Hybrid Heifer	-1.1109	0.2033	0.2477	0.03788
Commercial Red Hybrid Bull	-0.954	0.2053	0.2781	0.04122
Autogenous Black Hybrid Bull	-0.9016	0.2061	0.2887	0.04232
Sham Red Hybrid Bull	-0.8838	0.2055	0.2924	0.04251
Commercial Black Hybrid Heifer	-0.8495	0.2096	0.2995	0.04398
Sham Black Hybrid Heifer	-0.7793	0.2083	0.3145	0.0449
Commercial Black Hybrid Bull	-0.6224	0.1926	0.3492	0.04376
Sham Black Hybrid Bull	-0.5521	0.2049	0.3654	0.04751

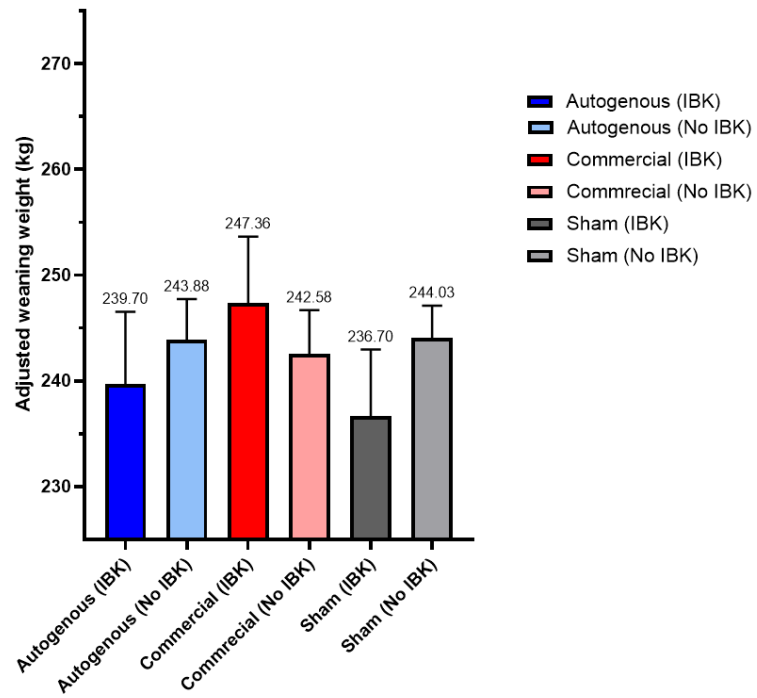
Supplementary Table S4: Predicted probability of retreatment (Mean x 100%) for each combination of treatment, management group, and sex.

Phenotype combination	Estimate	Standard Error	Mean	SEM
Autogenous Black Angus Heifer	-1.7768	0.4526	0.0378	0.03725
Commercial Black Angus Heifer	-1.5583	0.4503	0.05958	0.05335
Autogenous Black Angus Bull	-1.4013	0.4335	0.08056	0.06479
Sham Black Angus Heifer	-1.278	0.4271	0.1006	0.0753
Commercial Black Angus Bull	-1.1829	0.4296	0.1184	0.08514
Autogenous Red Hybrid Heifer	-1.159	0.2726	0.1232	0.05556
Commercial Red Hybrid Heifer	-0.9405	0.2598	0.1735	0.06659
Sham Black Angus Bull	-0.9026	0.4091	0.1834	0.1086
Autogenous Black Hybrid Heifer	-0.8129	0.2488	0.2081	0.07134
Autogenous Red Hybrid Bull	-0.7835	0.2536	0.2167	0.07443
Sham Red Hybrid Heifer	-0.6602	0.2411	0.2546	0.07735
Commercial Black Hybrid Heifer	-0.5944	0.2185	0.2761	0.07306
Commercial Red Hybrid Bull	-0.5651	0.2368	0.286	0.08055
Autogenous Black Hybrid Bull	-0.4374	0.2391	0.3309	0.08667
Sham Black Hybrid Heifer	-0.3141	0.2303	0.3767	0.08747
Sham Red Hybrid Bull	-0.2848	0.2234	0.3879	0.0856
Commercial Black Hybrid Bull	-0.219	0.204	0.4133	0.07944
Sham Black Hybrid Bull	0.06134	0.2238	0.5245	0.08912

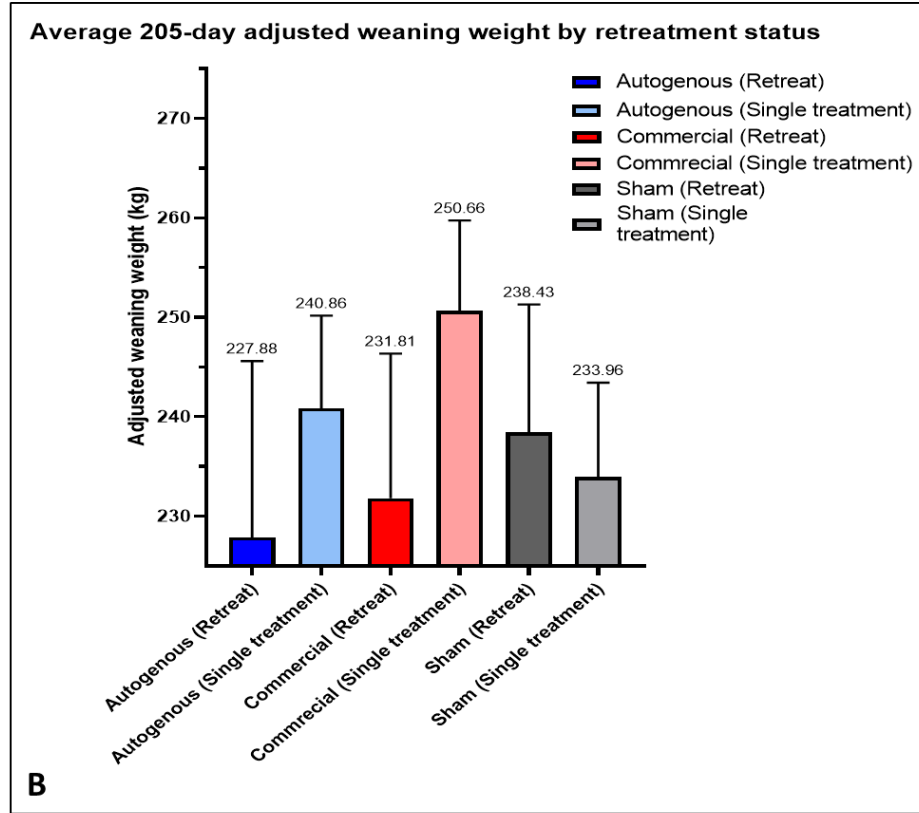


Supplementary Figure S1: ELISA OD result to the rPiA antigen by calf age and treatment. Age had an effect on antibody levels ($P = 0.005$).

Average 205-day adjusted weaning weight by treatment and IBK diagnosis



A



Supplementary Figure S2: Average 205-day adjusted weaning weight (in kg) by treatment group and IBK diagnosis (**A**). Autogenous: IBK: 239.70, No IBK: 243.88, Commercial: IBK: 247.36, No IBK: 242.58, Sham: IBK: 236.70, No IBK: 244.03. (IBK effect $P = 0.33$). Average 205 day adjusted weaning weight by treatment group and retreatment status (**B**). Autogenous: Retreatment: 227.88, Single treatment: 240.86, Commercial: Retreatment: 231.81, Single treatment: 250.66, Sham: Retreatment: 238.43, Single treatment: 233.96. (P for retreatment effect = 0.06).